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ABSTRACT

Evaluation in educational research and development programs tends to focus on the object of the innovation. Transactional evaluation focuses upon an area which is missing from these evaluative approaches--the interpersonal effects of the perceptions of project team members and the people in the environment surrounding the implementation or experimentation. The steps followed in a complete and comprehensive transactional evaluation are outlined, and examples are provided from the fields of education as well as clinical and training related settings. (KA)

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TRANSACTIONAL EVALUATION: ASSESSING HUMAN INTERACTIONS DURING PROGRAM DEVELOPMENT

Robert J. Seidel, PhD

INTRODUCTION

Evaluation in educational R&D programs seems to wear many hats. There is the goal-free approach of Scriven (1974), responsive evaluation of Stake (1967) and Evers (1975), standard goal-based evaluation techniques (summarized by Stufflebeam, *et al.*, 1971), etc. All of these evaluation techniques or models have one attribute in common. They all focus on the object of the innovation, whether it be change in process of learning by the student, or attaining of mastery of new objectives, or affective movement, etc. What seems to be missing from these approaches to evaluation of programs, and what transactional evaluation seems to provide an answer to—is a focus on the inter-personal effects of the perceptions of project team members and the people in the surrounding environment where the implementation or experimentation is taking place (see for example, Seidel, *et al.*, 1974; Hunter, *et al.*, 1975).

Transactional Evaluation (T.E.) is not restricted to educational evaluation. It can be applied to any program development situation. Although the bulk of the illustrative detail in this article will come from the field of education, examples will be described from clinical and training related settings as well.

Transactional Evaluation, therefore, is a technique to foster a formal, explicit set of relationships of roles, problems, and possible solutions amongst project members and between the project team and the implementing environmental users. Because T.E. obtains its data from participant opinions having potentially highly charged emotions, it is essential that the technique be applied by an independent evaluation team. Since opinions are solicited through active discussion it generally is not feasible to use in groups of more than 20-30 participants.

Transactional Evaluation gives a snapshot of what has happened in a project to date in that it shows the state of the human system at a point in time. A collection of these "snapshots" provides an overview related to human issues in implementing a program. In this sense, the result of T.E. could be called a summative evaluation of the project system. On the other hand, in dealing with the perceptions of the various project members and others, one can also focus on the means by which problems can be overcome and solutions evolved for improving the relationships and disambiguating the lack of clarity amongst the persons in terms of the way in which the program is to be used or the way in which the people are to relate to one another using the program. Then to this extent we could consider T.E. a form of formative evaluation.

THE PROCEDURE

Previous descriptions of transactional evaluation are provided in Rippey's book (1973) entitled "Studies in Transactional Evaluation." Explicitly, the steps followed

in a complete and comprehensive transactional evaluation (there are shorthand versions) would be as follows:

(1) A project volunteer presents a brief picture of the project to the remaining members of the group (say three to five minutes).

(2) The remaining members play roles of different user populations for the designated program. In so doing, they provide feedback in the way of comments, reactions and questions to the presenter so that issues and ambiguities are made explicit for the potential different user groups. Depending upon how heated the discussion or how defensive the volunteer presenter gets, an evaluation consultant or facilitator points out that all the opinions are legitimate data for analysis by T.E.

(3) A facilitator, usually a member of the evaluator consultant team, now has all of the participating project group prepare a listing of the purposes or goals of the program under consideration. (I have found it helpful to have the people prioritize this list of objectives or purposes.) These are then collected after a designated period of time (say 5 minutes).

(4) The above procedure is repeated with respect to the obstacles in reaching the goals of the project as perceived by each individual. Then these items are collected by the T.E. consultant.

(5) The same procedure is repeated with respect to the solutions that the individual thinks would be possible to overcome the designated obstacles and to enable satisfactory attainment of the project goals.

(6) The items are collated by the evaluation team. Duplication is eliminated and the items are organized into an attitude instrument with a scale of either 4 to 5 points ranging from "strongly agree" to "strongly disagree." The items purposely maintain as much as feasible the flavor of the originator, verbatim, if possible. The resulting questionnaire then becomes an instrument developed by the participants; and as much as is feasible represents contributions from all of the participating members. The latter is extremely important in that it provides a believable set of items for the project participants to answer.

(7) After the items have been organized and copies made (can be done immediately or in a 24-hour period, or whatever, depending upon the feasibility), the questionnaire is then administered to the participant group. The above approach of verbatim and universal representation yields high motivation to respond and highlights areas of poor communication.

(8) The data are analyzed by the evaluation team with respect to potential areas of ambiguity, agreement, and polarization in order that feedback be made available to the participants. During the collation of the data, it may be useful to categorize the various items indicating difficulties or agreement into broad perceptual areas. The value of this step will become clearer subsequently in this article when specific examples of T.E. applications are discussed. Suffice it to say here, such categorization aids interpretation of the data.

(9) Feedback is then provided the group members in the form of summarized data analysis without identifying any individual group member. Any suggestions apparent in the data for possible issues of communication, values, or disagreements, etc., are made either by the T.E. consultants or by the members themselves. In any event, this feedback session provides the groundwork for making modifications in the project directions so that it can proceed more smoothly in reaching desired goals.

(10) Hereafter, a series of meetings are scheduled in order to act upon new strategies for achieving the desired purposes with the program or project. In many instances, this will involve empirically verifying agreed upon goals or problems against existing usage of a program or product.

(11) Repeated applications of T.E. are made at timely intervals in order to provide continuous monitoring and to enhance project decision-making.

During the description of Step 8, I noted that the outcomes of the questionnaire administration fit into categories described as: Ambiguity, Consensus and Polarization. The definition of *Ambiguity* applies where there is a relatively flat distribution of responses by all the participants across the four- or five-point scale. *Polarization* refers to extreme groupings of the majority of participants at both ends of the scale. A *Consensus*, of course, refers to a clustering of the majority of the participants at either end of the scale. In the latter case, we would classify total *Disagreement* with an item in the same general consensus classification as total *Agreement* with an item. Implications for action in a project clearly will differ based upon whether the participants disagree or agree with a particular goal, problem or solution suggestion.

Each of the classifications are important for determining subsequent action. For example, in the case of Polarization, it is most likely that there is clear presentation of an item with decided disagreement between two factions in the participating group. On the other hand, an outcome rated as ambiguous with generally a number of participants grouped around the middle category of "not sure" or "neutral," probably can be resolved by clarifying the semantics of an item. These distinctions will be made clearer as we describe the results of a number of applications of the technique.

It is important to emphasize here, however, that the classification an item most appropriately fits is an arbitrary decision and is based upon the composition of the group and the criticality of each decision as it affects the members of the group. For example, a colleauge recently applied the technique in a small private school setting. The participants included the school board and the school administrator. In one particular item, the principal problem was asserted to be recalcitrance on the part of the administration of the school. All but one individual agreed with that stated problem. In this instance, the person who disagreed with that item, as a problem, turned out to be the school's chief administrator. Clearly, even though there was a majority in the Agreement category, the action demanded by the lone dissenter represented a need for a different course of action than if that dissenter had been one of the school board members. In fact, in subsequent discussions, this item turned out to be perceived as the key focal point of problems for the school. Aspects of this perception proved erroneous when the chief administrator, as a result of the issue surfacing in the T.E., increased his communication with the school board (Hillelsohn, 1976).

We have found that this technique is particularly applicable in our experience concerning the uses of computers in education. Repeatedly we have found that the problems in successful implementation of computer-based learning has depended upon the human elements involved in any project, rather than the technical problems of coding of instructional materials, providing sophisticated hardware, etc., etc. The technique is particularly useful as an evaluative aid when the decision-making environment within which a program is introduced may be perceived as requiring radical alterations, such as the purchase of computers, impact upon department structure when individualized instruction using the computer takes place, scheduling of students on the terminals, housing of the terminals, mundane problems, etc., etc. The value of this technique has been made quite clear to us in a recently undertaken implementation project involving computers with four schools in the District of Columbia. This effort will be described in detail in the next section.

THE DC SSPACE PROGRAM (Secondary Schools Project for Adopting Computer-Aided Education)

The DC SSPACE Program is sponsored by a grant awarded to the Human Resources Research Organization (HumRRO) from the National Science Foundation (Office of Technological Innovation in Education). The purposes of the two-year program are (1) to introduce computers and already developed computer curricular materials into the secondary schools of the District of Columbia, and (2) to study and make explicit the process of adopting the computer-based materials.

The evaluation effort was designed to satisfy the need for a systematic, yet flexible, method of gathering, analyzing, and presenting information bearing on a very wide range of complex and interrelated factors. The researchers concluded from previous studies that to focus on purely technical or cost factors would be to ignore the most critical factors in the adoption of educational innovations. Attitudes, values, roles, and inter-personal relationships needed to be addressed if the study was to reflect the *real* process of change. Such "objective" measures as student grade, attendance, computer usage, or cost breakdowns would only be meaningful if interpreted in context. Therefore, participating student, teacher and principal attitude data are gathered periodically in the school year. These attitude measures help to locate potential obstacles to smooth operation of the project in the interrelationships among administrative, technical, and educational areas.

Analysis of the adoption process per se started with application of T.E. in August 1974, at the Teacher Training Sessions. It included the playing of roles (e.g., administrators, parents, teachers and students) by each of the designated participants, and obtaining statements concerning the perceived goals by each person, as well as potential problems in meeting these goals and potential solutions for overcoming the problems. With the aid of this questionnaire we were able to focus on anticipated difficulties in the adoption process.

The teacher attitude data were obtained four times last school year: August, January, April and May. A fifth questionnaire was administered on the last day of the teacher workshop at Wilson High School (August 1, 1975). The results show that as the year progressed teachers became less concerned about scheduling students and involving the community in computer activities and other teachers in the project. The teachers became more concerned with implementation of computer-based instruction to complement existing curricular materials in January and April than they had been a year ago (August 1974). In May the desirability of achieving widespread computing literacy by implementing computer science in all subjects lessened considerably from August and January. The teachers also had renewed interest in involving new teachers and having a project newsletter in May.

The most recent transactional evaluation asked the teachers to list their major *accomplishments* and *disappointments* in the project to date and their *expectations* for the project in the coming year. We changed the words and satisfactorily counteracted a growing dissatisfaction with repeated T.E. administrations.

The major accomplishments agreed upon by most of the teachers had to do with computing literacy for themselves and their students and with this literacy, thus an appreciation for the curricular advantages of using the computer to enhance their teaching.

The disappointments are similar to problems revealed in the previous transactional administration. The most interesting finding is that the disappointments over the past year were principally confined to problems at each of the schools, rather than overall problems or disappointments in the project. For example, there were a number of arguments at one of the project schools amongst the teachers and this was reflected in one

of the statements submitted where two of the project teachers agreed with that problem of petty arguments, two were neutral and the remainder disagreed with that statement. A major area of disappointment which was almost unanimous (7 out of 9 teachers responded) related to equipment failures (not unusual in a new system implementation). No one expressed any disappointments concerning the project structure. We infer that the organizational arrangements across schools public and private, and with the cooperation of the administration, seem to work out rather well. Earlier worries about commitment from principals, and release time faded. Apparently the organizational arrangements took hold and the interrelationships of the personnel on the project became extremely favorable.

Continued enthusiasm of the participating teachers in our project is indicated in the expectations which teachers have set for next year. Paramount amongst these are to increase the use and obtain more effective programs for the classes. Also, teachers expect to have more students learn how to program on the computer. Finally, they want to expand computer literacy by having computer sciences as part of the curriculum in their schools.

Transactional Evaluation was used with the participating Principals as well. Initial concerns of the Principals similarly related to familiarization with both the equipment and with the position of the project within the schools. The data from the Principals also reflected a shift away from original concerns about implementation to other concerns now with post-project planning for integration of the project within the school system.

T.E. APPLICATIONS—Non-Educational

The question addressed in this section is: What are the potential applications and limits placed on the use of transactional evaluation? The answer to the first part, namely the potential scope of applications, can be stated generally as any of those situations involving a team or group of participants involved in accomplishing common purposes. Stated in this way, the areas of application are virtually limitless. There are some limiting considerations, however, and these are relevant to the structure of the group, team or organization concerned. Transactional evaluation will not be effective in any organizational structure which is hierarchical in nature and separates out authority from responsibility for the accomplishment of purposes or sub-purposes. It is not a cure for morale problems amongst personnel in different levels within an organization. It can be most helpful, however, in delineating, clarifying and ameliorating ambiguities and difficulties amongst a cooperative team venture. Where input from each of the team members is given serious consideration and will be acted upon as real data in a democratic manner, then Transactional Evaluation can be extremely useful as a means for performing a formative evaluation and changing the dynamics of interaction. The results of this will be to facilitate the administration of traditional or innovative programs, techniques, etc.

Empirically, I have obtained evidence of the vast scope in effective application of T.E. in a number of areas: Workshops at American Educational Research Association, Civil Service Training Seminars, a Veteran's Administration hospital, a project concerned with the problems in disseminating computer-based learning materials through higher education (CONDUIT), the project noted earlier concerned with the adoption of computer-based learning materials in a league of high schools (DC SSPACE Program), and with my own staff, the Instructional Technology Group at HumRRO. Each of these was used in a different environment with a slight variation in the T.E. application.

The application of T.E. in the DC SSPACE Program was discussed first because it is most representative of a complete and comprehensive T.E. application. It therefore provides a broad perspective against which the reader can judge the potential of variations in the technique as it might apply for his own needs.

The District of Columbia Veteran's Hospital Example

The setting for this application was a psychiatric ward of the District of Columbia's Veteran's Hospital. It was a dynamically oriented Therapeutic Community. All staff members—nurses, social workers, psychologists, psychiatrists and psychiatric residents—were expected to participate as active members of the Therapeutic Community. During the course of my work in 1974 as a staff member of this community, I noted a number of potential conflict areas amongst staff members regarding the roles of each of the members and the potential therapeutic direction. The chief psychiatrist, always looking for innovative approaches to increase staff participation and promote productive change, was very receptive to the idea of applying transactional evaluation during one of the weekly staff meetings. In this application, Steps 1 and 2 of the procedure described earlier were not deemed necessary and were, therefore, not included. I simply described the technique as the procedure progressed. The procedure for the application of T.E. at the VA Hospital involved successive staff meetings separated by a week's interval between the collection of goals, problems and solutions information, the administration of the questionnaire, and the reporting and discussion of the results with other staff members.

The details will not be presented here. It is useful to point out that 6 categories of areas evolved as a result of the administration of the T.E. That is, the goals, problems and solutions were able to be classified as they pertained to patients, staff, medicines, the community, the VA system, and society in general. Categorizing the items in this way facilitated communication amongst the staff members in attempting to alleviate areas of polarization and ambiguity. For example, there was a distinct polarization in the value of providing medication to all patients within the therapeutic community. There was also some ambiguity with respect to staff communication amongst themselves and how the staff members might play more active roles within the therapeutic community per se.

The value of the participant generated questionnaire and verbatim content was uniquely illustrated anecdotally in a conversation with the chief psychiatrist. Upon reviewing the results, he asserted to me that "*Your* questionnaire has ambiguous language in some of the items and that could account for some of the confusing answers." I reminded him that an important feature of the T.E. procedure is the retention of the jargon of the participants. *Their* questionnaire thus reflected ambiguity of communication among the group members.

As a result of this administration, the chief psychiatrist held a series of marathons amongst the staff and the results of the marathons seemed to indicate a rearrangement of priorities, of work in the ward, as well as indicating a degree of greater harmony amongst the staff. In general, the staff members received the results of the T.E. very favorably. In fact, two of the nurses on the ward remarked that this was the first time they felt their opinions were systematically sought out and given serious attention.

The Civil Service Instructional Technology Conference

This application took place in one, three-hour session. It was in the form of a workshop. The objectives of the workshop (Seidel, 1975) were (1) to conduct a

Transactional Evaluation of another previously attended workshop at the conference; (2) to identify other areas relevant to the participant's field where T.E. would be appropriate; and (3) to design a plan to incorporate T.E. into the monitoring and modification of a projected training program.

All the participants were in some way connected with either managing the training program directly or supervising training managers of programs in various federal agencies. The content which provided the vehicle for the T.E. application was a previously attended workshop at the same conference. That workshop, conducted by a colleague of mine (Hillelsohn, 1975) dealt with the application of a systems approach to the development of instructional materials. A significant minority of the participants in my workshop had attended that earlier workshop and therefore were able to provide a volunteer expert for the presentation step. The remaining members were divided up into various user groups, that is, users of the materials to be produced by the systems approach (trainees, training managers, and developers of programs of materials).

In this exercise, I had the participants write down five goals, five problem areas, and five solutions in order to limit the amount of time spent in generating the questionnaire. Within the session, five minutes were given over to the presentation by the volunteer "expert." Five minutes were allowed for questioning the expert, and five minutes each were given for the writing down of the five most important goals, obstacles and solutions to using the systems approach for developing modular course materials. Following the collection of the initial materials, the group was given a 15-minute break, during which time the materials were collated into a 15-item questionnaire. Upon reconvening, the questionnaire was administered orally; the participants copied down each item and, subsequently, completed the activity by checking one of the points on the five-point scale for each of the items. Following their completion of the items, the data were summarized by calling for shows of hands, item by item, and category by category. The remainder of the time was used for discussion of the collection of the results and discussion of applications in the various organizations represented by the participants.

Since there were only 15 items, the questionnaire is reproduced on the following page (Table 1).

As can be seen from the Table, Goal 1 was very useful to illustrate Polarization. Clearly, the group disagreed about the value of trainee selection of correct modules and self-management of their training. Subsequent discussion of the item revealed a difference in philosophy of training between those two polarized groups. Solutions items 3 and 4 were used to illustrate Ambiguity of response and, indeed, in the discussion which followed the collection of the data, the participants who were in the "not sure" or "disagree" category changed their opinions, and the initial results seemed to be more a result of semantic difficulties as opposed to real disagreement with the solution. In fact, one problem in Solution item 4 was that the item contained two separate thoughts. When these were isolated and the first part of the item retained, agreement followed.

Many of the participants saw T.E. as an extremely useful instructional management tool. And some proposed using it following the workshop to modify their own courses during the process of teaching. That is, they would administer the T.E. at the beginning of a course once objectives had been stated and then at various times during the sequence of instruction in order to utilize student feedback for modification of the materials. They also agreed that if they were in a hierarchically organized group such as a department, division, etc., that there might be a perceived threat by their superiors, in which case the T.E. would be a source of friction and, certainly, in such a closed environment would not be given much on credence.

In summary, the T.E. Application was effective in this single session, and the participants were very enthusiastic in response.

Table 1

T.E. Summary of the Civil Service Training Workshop

Key:

SA - strongly agree
A - agree
N - not sure
D - disagree
SD - strongly disagree

	GOALS	SA	A	N	D	SD
G1	Trainees can, by selecting the right modules, receive the training they need—it promotes efficiency.	3	7	2	6	2
G2	Less professional requirements for instructors at training sites.	1	5	3	8	3
G3	To save money by allowing students to learn a certain facet of their job in blocks.	2	13	2	3	0
G4	Clarifying what should be learned in units which can be defined and measured.	8	9	1	2	0
G5	Revision/adoption/modification of training course is easier.	9	8	1	1	1
	OBSTACLES					
O1	Being given enough time to develop the material in a manner reflecting the original philosophy.	3	8	6	3	0
O2	Training managers are not convinced of the need for this—complacency with the status-quo.	5	9	3	2	1
O3	Breakdown of communications—between developer, instructor and student.	3	11	2	4	0
O4	A number of programs needed cannot be designed using the modular system.	7	4	2	6	1
O5	Overall training effort can become disjointed and lack continuity.	4	4	4	7	1

(Continued)

Table 1 *(Continued)*

T.E. Summary of the Civil Service Training Workshop

	SOLUTIONS	SA	A	N	D	SD
S1	Give user of self-instructional packages the opportunity to interact with a human instructor.	5	10	2	2	1
S2	Publicity campaign to sell the value of the approach on a grass roots level—instructor—since they will cause it to work or fail.	3	5	6	6	0
S3	Apply it first to new courses and those perceived by management as not paying their own way.	4	5	4	6	0
S4	Gather statistics or budget predictions to show cost reduction over long run. We can make statistics say whatever we want.	3	7	6	3	1
S5	Bring in a consultant to give technical assistance or to do one module as an example.	3	11	2	4	0

Dissemination of Computer-Based Learning Materials (CONDUIT)

During the years 1970 thru 1973, HumRRO served as formative evaluation consultant to a project designed to study the dissemination process of computer-based learning materials in higher education. As part of our job in this project, we aided the policy board and the curriculum coordinators in the project (two levels of management) in clarifying their objectives and directions. The T.E. was applied separately to these two groups.

As an aid to clarifying the goals of CONDUIT, in April 1973, HumRRO employed a modified T.E. technique (see Rippey, 1973) with both Policy Board (PB) members and the Curriculum Coordinators (CCs). The application of the transactional technique occurred in two phases as follows. First, each of the participants was asked to state his/her Perceived Objectives of the project. They were then asked to state Obstacles in the path of meeting these objectives. At the conclusion of this phase, each participant was asked to suggest Solutions to overcome the obstacles in meeting these objectives. The CCs were contacted in a group at one of their meetings. The PB members were interviewed by the Principal Investigator over the telephone during the first week in April.

A second phase consisted of requesting each interviewee to provide the following information in schematic form: An outline of the perceived CONDUIT structure with respect to (1) communication, (2) coordination and (3) direction. We also asked that they recommend alternative structures which might take advantage of the good points and eliminate the disadvantages of the current structure.

Results of applying this technique were quite useful for formative development. The data were fed back to the participants at a meeting of the PB members, CCs, Discipline Committee (DC) members and HumRRO during the latter part of April 1973. This allowed further organizational evaluation on the part of the participants. Without any formal feedback to HumRRO, the technique seemed to play a part in raising the group's awareness of roles and functions of the CONDUIT participants during the remainder of the grant period. It is impossible to determine causality in such a situation, but shortly after the transactional technique was applied, weak leadership in the project was replaced.

CONCEPTUAL ISSUES

The points to be discussed briefly here are: decision about number of alternatives in the T.E. scale, the concepts of reliability and validity.

Data concerning selection of optimal number of alternatives with a Likert scale leave a wide margin of choice to the researcher. In a recent study (1972) Matell and Jacoby explained the effects of variations from 2-19 points. From a practical standpoint, proportion of scale used seems invariant over number of alternatives. Criteria of various types of validity (concurrent, predictive, etc.) and of internal consistency and test-retest stability also are independent of number of scale points used.

The only significant variable for T.E. purposes is whether or not to use an uncertain or neutral category. With 3 or 5 point scales, the "uncertain" category is used roughly 20% of the time. Beyond this length, the percent usage falls rapidly to between 7-11%. The decision to include the uncertain response possibility, therefore, rests primarily on the confidence of the researcher in covering the conceptual space which he is studying. In the T.E. application with participant generation of the items, its inclusion gives meaning to the Ambiguous classification. In the latter, distribution of responses involves heavy use of the uncertain or neutral point as well as distribution over the other scale points. And it reflects semantic ambiguity amongst the participants, a *real* part of the perceptual space of participants. I therefore recommend its use.

The relationship of the T.E. technique and scale to classic psychometric properties of validity and reliability is analogous to that of the personality inventories and projective techniques. That is, these classic properties seem inappropriate for dealing with dynamically changing states. Since the items are self-generated and verbatim contributions from everyone are retained as much as feasible, the resulting scale has high face validity. Reliability in the classical sense would only be expected on an instantaneous, internal consistency basis because of the dynamic nature of the perceptual states of the participants. (And even here, only if on a construct basis, groups of items are hypothesized to be measuring the same factor.) This is especially true if strategies for effecting change have been implemented as a result of the iterative use of T.E.

The basic purpose of using T.E. in a formative sense is to help transform "conflict energy . . . into productive activity" (Rippey, 1975). And if we are successful, classical psychometric issues are of subordinate interest.

REFERENCES

Evers, John W. "An Investigation of Goal-Free and Goal-Based Evaluation Strategies Through Project Director and Evaluator Ratings," Paper presented at the 1975 Annual Meeting of the American Educational Research Association, April 1975.

Hillelsohn, Michael J. "Instructional Modules: Using the Systems Approach," in Proceedings of Conference on Instructional Technology for Government Trainers, Washington, DC: The Interagency Advisory Group (Committee on Development and Training) and the U.S. Civil Service Commission, October 1975.

Hillelsohn, Michael J. "Transactional Evaluation: Examining Human Parameters in an Educational Program," Alexandria, VA: Human Resources Research Organization, January 1976 (unpublished consulting report).

Hunter, Beverly, Kastner, Carol, Rubin, Martin and Seidel, Robert J. *Alternatives in U.S. Education: Where Student and Computer Meet*, Englewood Cliffs, NJ: Educational Technology Publications, 1975.

Scriven, Michael. "Standards for the Evaluation of Educational Programs and Products," in *Evaluating Educational Programs and Products*, Gary D. Borich (Ed.), Englewood Cliffs, NJ: Educational Technology Publications, 1974.

Seidel, Robert J., Hunter, Beverly, Kastner, Carol, and Rubin, Martin. "Obstacles to Widespread Use of Computer-Based Curricular Innovations: A Review," *Journal of Computer-Based Instruction*, August 1974, Vol. 1, No. 1, 28-31.

Seidel, Robert J. "Transactional Evaluation: A Technique for Coping with Human Problems," in Proceedings of Conference on Instructional Technology for Government Trainers, Washington, DC: The Interagency Advisory Group (Committee on Development and Training), and the U.S. Civil Service Commission, October 1975.

Stake, R.E. "The Countenance of Educational Evaluation," *Teacher's College Record*, 1967, 68, pp. 523-540.

Stufflebeam, *et al. Educational Evaluation and Decision Making*, Itasca, IL: F.E. Peacock, 1971.

Rippey, R.M. (ED.) *Studies in Transactional Evaluation*, Berkeley, CA: McCutchan Publishing Corporation, 1973.

Rippey, R.M. "Proposal for Training Session: Transactional Evaluation of Instructional Innovations," Presentation at American Educational Research Association Meetings, Washington, DC, 1975.

Matell, Michael S., and Jacoby, Jacob. "Is There an Optimal Number of Alternatives for Likert-Scale Items? Effects of Testing Time and Scale Properties," *Journal of Applied Psychology*, 1972, Vol. 56, No. 6, 506-509.